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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,616	02/13/2002	Silvano Gai	112025-0482	7341
24267	7590	05/30/2006	EXAMINER	
CESARI AND MCKENNA, LLP 88 BLACK FALCON AVENUE BOSTON, MA 02210			FILIPCZYK, MARCIN R	
			ART UNIT	PAPER NUMBER
			2163	

DATE MAILED: 05/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/074,616

Applicant(s)

GAI ET AL.

Examiner

Marc R. Filipczyk

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 21-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 21-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

This Action is responsive to Applicant's amendment filed on March 21, 2206.

Claims 1-12 and 21-35 are pending.

To expedite the process of examination Examiner requests that all future correspondences in regard to overcoming prior art rejections or other issues (e.g. amendments, 35 U.S.C. 112, objections and the like) set forth by the Examiner that Applicants provide and link to the most specific page and line numbers of the disclosure where the best support is found (see 35 U.S.C. 132).

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-12 and 21-35 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth whether the invention generates a tangible result.

For a claimed invention to be statutory, the recited steps must produce a concrete and tangible result. State Street, 149 F.3d at 1373-74, 47 USPQ2d at 1601-02.

In the present case, independent claims 1, 8 and 22 only recite a program per se.

A computer program is statutory while being claimed as part of an otherwise statutory manufacture or machine. In such a case, the claim remains statutory irrespective of the fact that a computer program is included in the claim. The same result occurs when a computer program is used in a computerized process where the computer executes the instructions set forth in the computer program. Claims 1, 8 and 22, do not execute any action if there is no match between a sub-expression and a string.

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Hence, claims 1, 8 and 22 taken as a whole are directed to a mere program listing, i.e., to only its description or expression, is descriptive material per se and hence nonstatutory. In addition claims 1, 8 and 22 do not produce a useful, concrete and tangible result.

In the present case, independent claims 26 and 31 only recite an abstract idea. Claims 26 and 31, do not execute any action if there is no match between a sub-expression and a string.

Claims 26 and 31 do not state/accomplish a practical application and do not produce a useful, concrete and tangible result, and are hence nonstatutory.

Since the claimed invention taken as a whole does not produce a useful, concrete and tangible result, claims 2-7, 9-12, 21, 23-25, 27-30 and 32-35 which depend from 1, 8, 22, 26 and 31, respectively, are deemed to be directed to non-statutory subject matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the **second paragraph** of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 and 21-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 26 and 31, the segment, "having a corresponding action" is indefinite. It is not clear how a regular expression has a corresponding action, it is further not clear what the corresponding actions are.

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Regarding claim 2, the phrase, “the one” is indefinite. Although matching characters is clear, the scope of the one character is not clear because the claim does not disclose a particular one character.

Regarding claim 4, the phrase, “the entries of a section” is indefinite. It is not clear what entries of what section are referred to. Second, the segment, “a respective sub-expression” is indefinite. It is not clear how many sub-expressions are claimed since the segment, “a respective sub-expression” appears twice in the claim.

Regarding claim 8, the segment, “a corresponding action” is indefinite. It is not clear how a regular expression has a corresponding action, it is further not clear what the corresponding actions are. Second, the phrase, “the given regular expression” is indefinite. There is insufficient antecedent basis for this limitation in the claim. Third, the phrase “the one” is indefinite. Although matching characters is clear, the scope of the one character is not clear because the claim does not disclose a particular one character. Fourth, the segment, “a respective sub-expression” is indefinite. It is not clear how many sub-expressions are claimed since the segment, “a respective sub-expression” appears twice in the claim.

Regarding claim 22, the segment “a corresponding action” is indefinite. It is not clear how a regular expression has a corresponding action, it is further not clear what the corresponding actions are.

Regarding claims 2-7, 9-12, 21, 23-25, 27-30 and 32-35 depend from 1, 8, 22, 26 and 31, respectively, contain at least the deficiencies of their parent claims and are rejected to on the same merits.

Claim Rejections - 35 USC § 103

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12, 21-25 and 26-35 are rejected under 35 U.S.C. 103(a) as best as Examiner is able to ascertain as being unpatentable over Fritchman (U.S. Patent No 6,785,677) in view of Sherman (U.S. Patent No. 6,389,507).

Regarding claims 1, 2 and 6, Fritchman discloses a method for programming a pattern matching engine having a plurality of information storage entries with one or more regular expressions (fig. 2, block 20), each regular expression including a plurality of characters and having a corresponding action to be applied to matching strings, the method comprising the steps of:

identifying one or more borders within a given regular expression, the one or more borders separating the given regular expression into a plurality of sub-expressions, at least one sub-expression having a plurality of sequential characters (figs. 3A-3C); and

loading one or more entries of the pattern matching engine with a plurality of the sequential characters from at least one sub-expression, (fig. 2, block 21, PATTERN; *preprocessing pattern string*); wherein

the borders are defined by a predetermined sequence of regular expression metacharacters, the metacharacters being wildcards (col. 7, Table; “_” and “%”, Fritchman);

executing the corresponding action based on a match (abstract and col. 8, lines 12-24), but does not expressly teach that the search engine has a content addressable memory (CAM).

Sherman teaches a search engine using a ternary CAM to store data for pattern matching (abstract and fig. 3, Sherman). One of the benefits of a CAM is allowing program access to and from the memory (CAM). Note, Fritchman uses a program to access the memory system's content (abstract, Fritchman). Hence, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to store Fritchman's data in a CAM since Fritchman's memory system supports and enables program interaction (abstract, Fritchman). One would have been motivated to combine the two pattern matching systems because both systems are compatible by supporting program access to memory and Fritchman system would benefit from the format advantages of using a ternary CAM.

Regarding claim 3, Fritchman/Sherman disclose organizing at least part of the pattern matching engine into a plurality of sections, and wherein each section of the pattern matching engine is loaded with a plurality of search patterns for a corresponding sub-expression (fig. 2, block 21 and figs. 3A-3C, Fritchman).

Regarding claim 4, Fritchman/Sherman disclose one of the search patterns includes a complete match of the respective sub-expression, a search pattern that includes a partial match of the respective sub-expression, and a mismatch pattern (fig. 2, block 22, Fritchman). (Note: each pattern has a complete match, partial match and mismatch depending on the target string)

Regarding claim 5, Fritchman/Sherman disclose associating at least one sub-expression with a current variable (figs. 4A-4C, Fritchman); and

loading the associated current state variable into each entry of the section of the pattern matching engine that contains the at least one sub-expression (fig. 2, blocks 22 and 23; TARGET *matched strings*, and figs. 4A-4C, Fritchman) .

Regarding claim 7, Fritchman/Sherman teach the CAM is a ternary CAM (fig. 3, Sherman) that supports don't care values (col. 7, table; *wildcards*, Fritchman), and

the mismatch pattern includes don't care values (fig. 2, block 22, TARGET; values RS, Fritchman).

Regarding claim 21, Fritchman/Sherman disclose the regular expression is associated with an action (fig. 2, prefix, suffix, Fritchman),

pattern matching engine (fig. 3 and col. 6, lines 27-46, Sherman) including at least a first and second memory (fig. 3, *TCAM* and *SRAM* and *DCAM*, Sherman) with entries,

and that the second memory's entries are loaded with actions (fig. 3, *associated data*, Sherman) associated with one regular expression.

Regarding claims 8-12 and 22-35, they comprise the same subject matter as claims 1-7 and 21 rejected above, and are therefore rejected on the same merits.

Response to Arguments

Applicant's arguments filed March 21, 2006 have been fully considered but they are not persuasive. The arguments and responses are listed below.

Applicant argues on pages 10 and 11 of the 3/21/06 response that the submitted amendment is believed to have overcome the rejections and objections.

Examiner disagrees. Applicant has not addressed all the issues raised by the office and therefore has not overcome previous objections and rejections.

Applicant argues on page 12 of the 3/21/06 response that Fritchman does not teach parallel operation.

Examiner disagrees. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., parallel operation) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Further, Fritchman/Sherman teach parallel operations using CAM structure (Sherman, Summary).

With respect to all the pending claims 1-12 and 21-35, Examiner respectfully traverses Applicant's assertion based on the discussion and rejection cited above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

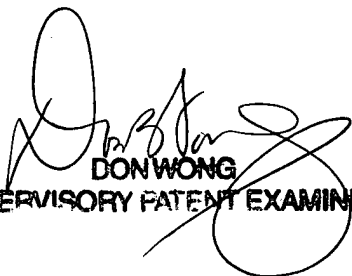
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc R. Filipczyk whose telephone number is (571) 272-4019. The examiner can normally be reached on Mon-Fri, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MF
May 25, 2006


DON WONG
SUPERVISORY PATENT EXAMINER